

What Is Claimed Is:

1. An apparatus for forming a thin film, comprising:

a reaction chamber having a top portion, a sidewall portion and a bottom portion;

a gas injector penetrating the top portion and letting a source element pass therethrough;

a distributor connected to the gas injector, wherein a plurality of injection holes are formed in the distributor and the source element is injected through the plurality of injection holes; and

a substrate heating member positioned in a reaction space defined by the top, bottom and sidewall portions of the reaction chamber, and arranged below the distributor.

2. The apparatus of claim 1, further comprising a ram that is mounted through the bottom portion of the reaction chamber to support the substrate heating member.

3. The apparatus of claim 1, wherein the distributor includes a first portion having a cylindrical and a second portion shaped like a truncated cone.

4. The apparatus of claim 3, wherein the plurality of injection holes are arranged at the side of the second portion of the distributor.

5. The apparatus of claim 4, wherein each injection hole includes a large diameter part

accepting the source element and a small diameter part in which the velocity of source element increases.

6. The apparatus of claim 4, wherein the large diameter part has a large diameter rather than the small diameter part.

7. The apparatus of claim 1, wherein the substrate heating member is positioned at the center of the reaction space and the gas injector is disposed at the center of the top portion of the reaction chamber.

8. The apparatus of claim 1, further comprising a plurality of distributors that are classified into a first distributor at the center of the top portion and a second distributor around the first distributor in the top portion so as to inject the source element.

9. The apparatus of claim 8, wherein the source element includes a primary reactant element and a secondary reactant element.

10. The apparatus of claim 9, wherein the primary reactant element passes through the first distributor arranged at the center of the top portion and the secondary reactant element passes through the second distributor arranged around the first distributor.

11. The apparatus of claim 10, wherein an axis of the second distributor forms an angle of about 90 degrees with an axis of the first distributor when the first and second distributors are disposed at the top portion of the reaction chamber.

12. The apparatus of claim 10, wherein an axis of the second distributor forms an angle of less than 90 degrees with an axis of the first distributor when the first and second distributors are disposed at the top portion of the reaction chamber.

13. The apparatus of claim 10, wherein the secondary reactant element is selected from a group consisting of ammonia ( $\text{NH}_3$ ), hydrazine ( $\text{N}_2\text{H}_4$ ), water vapor ( $\text{H}_2\text{O}$ ), oxygen ( $\text{O}_2$ ) and ozone ( $\text{O}_3$ ).

14. The apparatus of claim 1, wherein the number of and the size of the injection holes vary depending on the reaction space of the reaction chamber.

15. The apparatus of claim 1, wherein the top portion of the reaction chamber has a dome shape.

16. The apparatus of claim 1, wherein the substrate heating member includes both a heating element and an electric power source supply as one body.

17. A method for forming a thin film in a deposition apparatus that has a reaction chamber having a reaction space therein, a substrate heating member disposed in the reaction space, a gas injector in a top portion of the reaction chamber, and a distributor connected to the gas injector, the method comprising the steps of:

streaming a chemical source gas through the gas injector;

injecting the chemical source gas into the reaction space through the distributor

that having a plurality of injection holes; and

reacting the chemical source gas, whereby the thin film is formed upon a substrate that is disposed on the substrate heating member.

18. The method of claim 17, wherein the distributor includes a first portion having a cylindrical and a second portion shaped like a truncated cone.

19. The apparatus of claim 18, wherein the plurality of injection holes are arranged at the side of the second portion of the distributor.

20. The apparatus of claim 19, wherein each injection hole includes a large diameter part accepting the chemical source gas and a small diameter part in which the velocity of chemical source gas increases.